

## The *Chilicola megalostigma* Species Group and Notes on Two Lost Types of *Chilicola* (Hymenoptera: Colletidae, Xeromelissinae)

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*Abstract.*—The three species of the *megalostigma* group of *Chilicola* (*Hylaeosoma*) are reviewed and a key for their separation is provided. *Chilicola* (*H.*) *stenocephala* Brooks and Michener, new species, is described from Amazonian Colombia. *Chilicola* (*H.*) *polita* Michener is recorded for the first time from Costa Rica. Lectotypes are designated for two Brazilian *Chilicola* species originally described as *Oediscelis huberi* Ducke and *O. minima* Ducke.

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The xeromelissine genus *Chilicola* Spinola has been characterized by Toro and Moldenke (1979) and Michener (1994, 1995). It consists of small, slender, usually black bees superficially similar to species of *Hylaeus* in the subfamily Hylaeinae, but differing notably in the presence of a weak scopa on the posterior femora and tibiae, and on the first three metasomal sterna, the hairs on the second sternum being the best developed part of the scopa. *Chilicola* is particularly abundant and diverse in temperate South America (Chile, Argentina) but ranges north to central Mexico and to St. Vincent in the Lesser Antilles.

The subgenus *Hylaeosoma*, characterized by Michener (1994, 1995), occurs from Brazil to central Mexico. It consists of unusually slender species with a depression for the reception of the antennal scape above each antennal alveolus.

### THE *CHILICOLA MEGALOSTIGMA* SPECIES GROUP

Within the subgenus *Hylaeosoma* there is a species-group consisting of very smooth, shiny species with a strong, flaring pre-occipital carina. This group, here known as the *megalostigma* group, which was also characterized as Group B by Michener (1994:83), consists of *C. megalostigma*

Ducke from northeastern Brazil, *C. polita* Michener from Mexico to Panama, and the new species described below from Colombia.

A hitherto unrecognized characteristic of the *megalostigma* group is the modified front tarsus of females, perhaps serving to pull pollen from minute, deep flowers or tubular anthers. The front tarsus of an ordinary species of *Hylaeosoma*, *Chilicola mexicana* Toro and Michener, is illustrated in Figure 1. Figures 2 to 4 show the front tarsi of the three species of the *megalostigma* group. All (including *C. mexicana*) are bristly, with strong curved bristles as well as straight ones, as shown in Figure 4. This vestiture is omitted in Figures 1 to 3. In females of the *megalostigma* group, the front basitarsus is shortened if one ignores the apical process, whereas the second segment is relatively large, compared to that of other species groups. More details are indicated in the figures and in the key to species, below.

Abbreviations used are the following: S, sternum; T, tergum. KSEM, Entomology Division, Snow Collections, University of Kansas Natural History Museum, Lawrence, Kansas, U.S.A. MPEG, Museu Paraense Emílio Goeldi, Belém, Pará, Brazil.

KEY TO THE SPECIES OF THE MEGALOSTIGMA GROUP OF *CHILICOLA*

- 1. Minimum distance between eyes about three-fourths of width of eye on same horizontal line seen from front (Fig. 8); malar area distinct, over half as long as wide (Fig. 9). First and second front tarsal segments of female each ending in long, down-curved, horn-like process with blunt apex (Fig. 4) ..... *stenocephala* Brooks & Michener
- Minimum distance between eyes about equal to width of eye on same horizontal line seen from front; malar area short, less than half as long as wide. First and second front tarsal segments of female each ending in long process terminated by curved bristle ..... 2
- 2. Frons with pit on frontal line above level of antennae, forming equilateral triangle with the two antennal sockets; first and second front tarsal segments of female each ending in long process terminated by curved bristle coarser than other tarsal bristles (Fig. 3) ..... *megalostigma* (Ducke)
- Frons without pit on frontal line; first and second tarsal segments of female each with apical process ending with curved bristle similar to bristles elsewhere on tarsus ..... *polita* Michener

*Chilicola* (*Hylaeosoma*) *megalostigma* (Ducke)

*Oe[discelis] megalostigma* Ducke 1908:62; Ducke 1912:83.

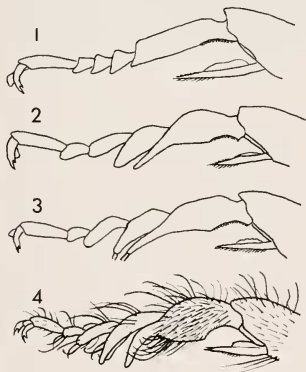
*Oediscelis megalostigma*, Nascimento 1979:7.

*C[hilicola] (H[y]l[ae]o[s]o[m]a) megalostigma*, Michener 1994:87.

This species is known from the Serra de Baturité, 4°15'S, 39°05'W, altitude 700 m, in the state of Ceará, Brazil. Although on a mountain, this location in the xeric northeast of Brazil is a very different habitat from the moist forest areas where other species of this group are found. The specimens were taken by Ducke on the flowers of *Borreria verticillata* Mey. (Rubiaceae).

The lectotype, selected but not published by J. S. Moure and C. D. Michener, was designated (i.e., published) by Nascimento (1979); it is in MPEG. Lectoparatypes are in MPEG, KSEM, and presumably in the collection of Padre J. S. Moure, Universidade Federal do Paraná, Curitiba. Specimens are also in the Departamento de Zoologia, Universidade de São Paulo, São Paulo, Brazil.

A front tarsus from two different females was removed and examined in glycerin (and preserved in microvials on the pins). The apical processes of the first two



Figs. 1-4. Outer views of anterior tarsi of females of *Chilicola* (*Hylaeosoma*). All are bristly with both curved and relatively straight bristles and hairs, as shown in Figure 4. 1, *C. mexicana* Toro and Michener; 2, *C. polita* Michener; 3, *C. megalostigma* (Ducke); 4, *C. stenocephala* n. sp. In Figure 3 the bases of only two large setae are indicated arising from the apices of the processes of the first two tarsal segments of *C. megalostigma*. Comparable but seemingly more slender setae exist in *C. polita* (Fig. 2).

tarsal segments each ends in a curved bristle coarser than the other tarsal bristles. Bases of these bristles are shown in Figure 3. A bristle that is nearly as coarse, however, arises from the lower distal end of the third tarsal segment. These bristles are brittle, easily broken off so that they look like pegs even at a magnification of 80 $\times$ .

*Chilicola (Hylaeosoma) polita* Michener

*Chilicola (Hylaeosoma) polita* Michener 1994:87.

Except for the characters indicated in the key to species, *C. polita* appears not to differ from *C. megalostigma*. When the front tarsus of the female is in its usual slightly down-curved position, the process of the basitarsus is appressed against the under side of the second segment and is unrecognizable, its hairs seemingly arising from the second segment. We recognized the process only when the tarsus was relaxed and bent under a dissecting microscope (Fig. 2). We have not been able to examine the front tarsi of females of *C. polita* at high magnification in a liquid such as glycerin; there may be no consistent difference between *C. polita* and *C. megalostigma* in this structure (see key to species).

*Chilicola polita* is known from Veracruz and Oaxaca, Mexico, and Chiriquí Province, Panama. A new record is as follows: Costa Rica: San José Province, San Antonio de Escazú (Eberhardt's house) [9°55'N, 84°08'W], May 27, 1996, on *Cuphea* (G. Melo, collector). [See Addendum.]

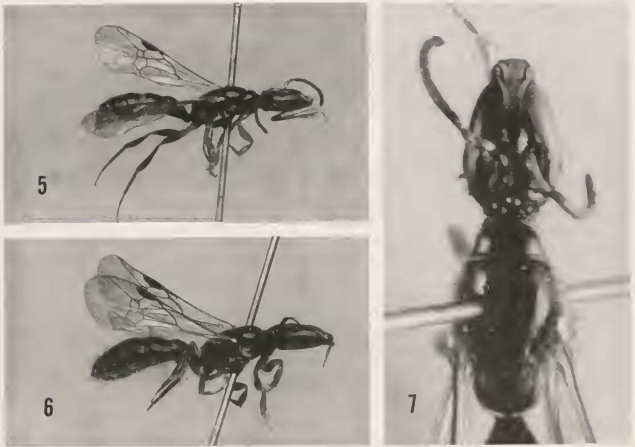
The specimen from Costa Rica as well as the holotype from Veracruz are in KSEM.

*Chilicola (Hylaeosoma) stenocephala*  
Brooks and Michener, new species

In its elongate body form (Figs. 5, 6) this species resembles other species of *Hylaeosoma*, although the length is exaggerated by the long head which in all specimens available is directed forward in a prognathous position (Fig. 7), rather than being

hypognathous as in most bees. Other species of the subgenus have a tendency to the same condition, especially in species with long heads. This is likely to be related to pushing down into small deep flowers or flower clusters. The key to species indicates some of the principal differences between *C. stenocephala* and its closest relatives, *C. megaloccephala* and *polita*.

*Male*: Body length 6 mm. Coloration: Black, the following parts testaceous: longitudinal band on clypeus (yellowish), labrum, mandible, malar area (dark), anterior part of hypostomal area, antennal scape and pedicel, under side of flagellar segments 2 to 4 (sometimes dark brown), legs (femur, tibia and tarsus of posterior leg infuscated). The following transparent amber: posterior pronotal lobe, tegula, axillary sclerites of wings, apical margins of metasomal terga. Bases of T2 to T4 and metasomal sterna except S1 brown. Wings transparent with veins and stigma black. Body surface: Highly polished and shining, with widely separated, not sharply defined punctures, except propodeum; dorsal surface of propodeum with fine longitudinal, radiating striae; sides of propodeum lineolate with small punctures, rather dull; metasomal sterna lineolate. Hairs: Sparse, simple, erect, dark testaceous to dull whitish, notably long on metasoma, especially posteriorly; frons with V-shaped pattern of hairs, lower end between antennae, arms extending to upper part of frons (Fig. 8); pronotal lobe margined with short, appressed white hairs; propodeum with short, appressed white hairs that do not hide surface, except for hairless striate dorsal surface. Structure: Head elongate (Figs. 7, 8), proportions as shown in illustrations, paraocular area, with well developed depression for antennal scape extending upward toward ocellular area from antennal base (as in other *Hylaeosoma*); medial to depression a longitudinal, impunctate welt (white on left of Fig. 8) extending from antennal base to upper ocular tangent; first flagellar seg-

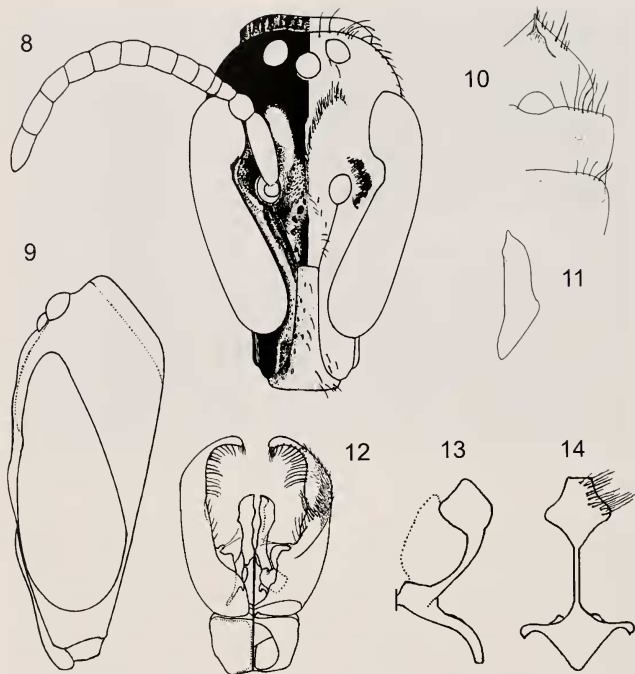


Figs. 5-7. *Chilicola (Hylaeosoma) stenocephala* n. sp. 5, male holotype; 6, female paratype; 7, dorsal view to show thorax, male.

ment shorter than pedicel, about 1.5 times as long as broad, segments 2 and 3 broader than long, remaining segments longer than broad, 11 over three times as long as broad; malar area about as long as wide (Fig. 9); ocelloccipital distance about two ocellar diameters measured to apex of high preoccipital carina; genal area above about as wide as eye seen from side, below tapering to vanishing point. Maxillary palpus about as long as prementum, nearly as long as head, first two segments short, remaining four segments long, straight, progressively slightly shortened toward apex, so that segment 3 is longest (also broadest). Pronotum with large dorsal surface (Figs. 5, 7) about on level with scutum which is over three times as long as mid-dorsal part of pronotum. Legs slender (Fig. 5). Wings as shown in Figure 5; apex of marginal cell minutely truncate. T1 longer than broad, in profile a slight

constriction between T1 and T2 (Fig. 5); T7 rather narrowly rounded at apex; posterior half of S6 with strongly elevated longitudinal ridge tapering posteriorly, ending in narrow, sharp, bristled apex (Figs. 10, 11). T7, T8 and genitalia as in Figures 12 to 14; genitalia with apices of gonoforceps much elongated and curved mesad, thus differing from those of the other species of this group (see Michener 1994, Fig. 10) as well as from all other *Chilicola* (see Toro and Moldenke 1979).

*Female*: As described for male except as follows: Clypeus black, without testaceous band; flagellum blackish; pronotal lobe dark brown; legs infuscated dark brown except trochanters testaceous; metasoma black, dark brown ventrally. Scopa of nearly erect whitish plumose hairs on S1 to S3, longest on S2. Scopal hairs of hind femur plumose, shorter than femoral diameter; hairs of hind tibia long and sim-



Figs. 8-14. Male of *Chilicola (Hylaeosoma) stenocephala* n. sp. 8, face, sculpturing on left, hairs on right; 9, side view of head; 10, S5 and S6; 11, side view of S6, ventral side to the left; 12, genitalia, dorsal on left; 13, S7, right hand half, ventral view; 14, S8, dotted line across extreme base represents actual condition of specimen; but the base has been drawn in what is presumably its undamaged shape.

ple. Flagellum short, segments broader than long except 8 and 9 which are slightly longer than broad and 10 which is about twice as long as broad; last two segments of maxillary palpus missing, probably broken off in the single specimen; anterior tarsus bristly, segments 1 and 2 with large, apical, down-curved processes lack-

ing apical hairs or pegs (Fig. 4); T1 about as long as broad; apex of metasoma unmodified.

Holotype male and one male and one female paratype: Colombia: Amazonas: La Chorrera [0°44'S, 73°01'W], 24-31 August, 1976 (M Cooper). One additional male paratype, same data but 3 September,

1976. All bear the Natural History Museum (London) number BM 1976-727, and the specimens are in that Museum except one male paratype in KSEM.

#### NOTES ON TYPES

While on the subject of tropical species of *Chilicola*, it is appropriate to publish information on the types of two species that had been lost. In 1955 Padre J. S. Moure and C.D.M. remounted many specimens in the Ducke collection in the Museu Paraense Emílio Goeldi in Belém, Pará, Brazil (MPEG). Remounting was necessary because of corroded pins that broke at the levels of labels and inside of specimens, sometimes bursting them. Many species were represented by series of syntypes. We selected and labeled lectotypes and lectoparatypes. These were published, and thus formally designated, by Nascimento (1979) in his catalog of hymenopteran types in MPEG.

That catalog makes no mention of *Oediscelis huberi* Ducke and *O. minima* Ducke, although types of *O. megalostigma* Ducke and other species described by Ducke in the same paper were designated. The reason has only now become evident, since the lectotypes of *O. huberi* and *minima* were found by G. Melo in KSEM, where they must have been left by C.D.M. or by Padre Moure. They will be returned to MPEG. The following notations and lectotype designations are in the style of Nascimento's (1979) catalog of types.

*Oediscelis huberi* Ducke 1908:63.

Lectótipo. Brasil: Ceará, Serra de Baturité [4°15'S, 39°05'W], 600 m, 3-VIII-08 (Ducke). (Des. Moure e Michener, 1955).

The headless female is badly mounted on a paper point. To judge by the wing venation this is a member of the subgenus *Hylaeosoma*, where it was placed by Michener (1995). The abundant punctures and

unmodified front tarsus exclude it from the *megalostigma* group.

*Oediscelis minima* Ducke 1908:63.

Lectótipo: Brasil: Ceará, Quixadá [04°58'S, 39°01'W], 4-VII-08 (Ducke). (Des. Moure e Michener 1955).

The specimen consists of a female head and anterior half of thorax, with one badly damaged forewing, but no other wings, badly mounted on a paper point. This species is a member of the subgenus *Proso-poides*, where it was placed by Michener (1995).

#### ACKNOWLEDGMENTS

For the loan of the specimens of *Chilicola stenocéphala* we thank Suzanne Lewis and Christine Taylor of the Natural History Museum [London]. This is contribution number 3231 from the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas 66045, U.S.A.

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#### ADDENDUM

We have just received four specimens of *Chilicola (Hylaeosoma) polita* Michener that add substantially to its distribution as indicated in the body of this paper. The first two, listed below, are from the Centre for Land and Biological Resources, Ottawa, Ontario, Canada. The other two were received through Laurence Packer, York

University, North York, Ontario, Canada. The data are as follows (one specimen from each locality):

Guatemala: Zacapa, 3.5 km southeast of La Union, 1500 m altitude, 20–27 June 1993, in flight intercept trap (J. Ashe, R. Brooks).

Mexico: Chiapas: Pk. Lago Belgica, 14 June 1989, in flight intercept trap (H. Howden); Puebla: 22 km

north of Xicotepec de Juarez, 1070 m altitude, 17 June 1983 (M. Kaulbars); Tamaulipas: Rancho del Cielo near Gomez Farias, 1000 m altitude, 7 Aug. 1983 (M. Kaulbars).

The last locality is the northernmost record for the genus *Chilicola*.